CLAIMS

What is claimed is:

1. An apparatus comprising:

an optical transmitter transmitting a signal light to a transmission path, wherein the signal light has a corresponding rise time and fall time and the transmitter adjusts at least one of the rise time and fall time.

2. An apparatus as in claim 1, wherein the optical transmitter comprises:

an adjusting circuit adjusting said at least one of the rise time and fall time.

3. An apparatus as in claim 1, wherein the optical transmitter comprises:

a light source emitting a light;

a modulation signal generator generating an electrical modulation signal having a corresponding rise time and fall time;

an adjusting circuit adjusting at least one of the rise time and fall time of the electrical modulation signal; and

a modulator modulating the emitted light with the adjusted electrical modulation signal, to thereby produce said signal light having at least one of the rise time and fall time of the signal light adjusted.

4. An apparatus as in claim 1, wherein the transmitter adjusts both the rise time and the fall time.

5. An apparatus as in claim 2, wherein the adjusting circuit adjusts both the rise time and the fall time.

6. An apparatus as in claim 1, wherein the transmitter lengthens both the rise time and the fall time.

7. An apparatus as in claim 1, wherein the transmitter shortens both the rise time and the fall time.

8. An apparatus as in claim 1, wherein the transmitter adjusts both the rise time and the fall time to maintain amplitude deterioration and phase margin of the transmitted signal light within a specific range.

9. An apparatus as in claim 1, further comprising:

a receiver receiving the transmitted signal light through the transmission path, wherein the transmitter adjusts said at least one of the rise time and fall time in accordance with characteristics of the signal light at the receiver.

10. An apparatus as in claim 3, further comprising:

a receiver receiving the transmitted signal light through the transmission path, wherein the adjusting circuit adjusts said at least one of the rise time and fall time of the electrical modulation signal in accordance with characteristics of the signal light at the receiver.

11. An apparatus as in claim 1, further comprising:

a receiver receiving the transmitted signal light through the transmission path, wherein the transmitter performs one of the group consisting of

lengthening both the rise time and the fall time in accordance with characteristics of the signal light at the receiver,

shortening both the rise time and the fall time in accordance with characteristics of the signal light at the receiver, and

adjusting both the rise time and the fall time to maintain amplitude deterioration and phase margin of the transmitted signal light within a specific range in accordance with characteristics of the signal light at the receiver.

12. An apparatus as in claim 1, further comprising:

a receiver receiving the transmitted signal light through the transmission path; and

a controller controlling the transmitter to adjust said at least one of the rise time and fall time in accordance with characteristics of the signal light at the receiver.

Sub C4

13. An apparatus as in claim 3, wherein the modulator modulates the emitted light via one of the group consisting of optical phase modulation and optical frequency modulation.

14. An apparatus as in claim 1, further comprising:

a dispersion compensator compensating for wavelength dispersion characteristics of the transmission path.

15. An apparatus as in claim 1, further comprising:

a plurality of said optical transmitters, each transmitting a respective signal light having a different wavelength than the signal lights of the other optical transmitters; and

an optical multiplexer multiplexing the signal lights together into a wavelength division multiplexed (WDM) signal which is transmitted through the transmission path.

16. An apparatus comprising:

an adjusting circuit adjusting at least one of a rise time and a fall time of an electrical modulation signal; and

a modulator modulating a light with the adjusted electrical modulation signal.

17. An apparatus as in claim 16, wherein the adjusting circuit adjusts both the rise time and the fall time.

18. An apparatus as in claim 16, wherein the adjusting circuit lengthens both the rise time and the fall time.

19. An apparatus as in claim 16, wherein the adjusting circuit shortens both the rise time and the fall time.

20. An apparatus as in claim 16, wherein the modulated light is transmitted through a transmission path, the adjusting circuit adjusting both the rise time and the fall time to maintain amplitude deterioration and phase margin of the transmitted, modulated light within a specific range.

21. An apparatus as in claim 16, wherein the modulated light is transmitted through a transmission path, the apparatus further comprising:

a receiver receiving the transmitted, modulated light through the transmission path, wherein the adjusting circuit adjusts said at least one of the rise time and fall time in accordance with characteristics of the modulated light at the receiver.

22. An apparatus as in claim 16, wherein the modulated light is transmitted through a transmission path, the apparatus further comprising:

a receiver receiving the transmitted, modulated light through the transmission path; and

a controller controlling the adjusting circuit to adjust said at least one of the rise time and fall time in accordance with characteristics of the signal light at the receiver.

23. An apparatus as in claim 16, wherein the modulator modulates the light via one of the group consisting of optical phase modulation and optical frequency modulation.

24. An apparatus as in claim 16, wherein the modulated light is transmitted through a transmission path, the apparatus further comprising:

a dispersion compensator compensating for wavelength dispersion characteristics of the transmission path.

25. An apparatus as in claim 16, wherein the adjusting circuit comprises:

a electrical amplifier amplifying the electrical modulation signal; and

a filter filtering the amplified electrical modulation signal.

26. An optical communication system comprising:

a transmitter including an adjusting circuit adjusting at least one of a rise time and a fall time of an electrical modulation signal, and a modulator modulating a light with the adjusted electrical modulation signal, the transmitter transmitting the modulated light through a transmission path;

a receiver receiving the transmitted, modulated light through the transmission path; and

a controller controlling the adjusting circuit to adjust said at least one of the rise time and fall time in accordance with characteristics of the modulated light at the receiver.

27. An optical communication system as in claim 26, wherein the controller controls the adjusting circuit to perform one of the group consisting of

lengthening both the rise time and the fall time in accordance with characteristics of the modulated light at the receiver,

shortening both the rise time and the fall time in accordance with characteristics of the modulated light at the receiver, and

adjusting both the rise time and the fall time to maintain amplitude deterioration and phase margin of the modulated light within a specific range in accordance with characteristics of the modulated light at the receiver.

28. An apparatus comprising:

an adjusting circuit adjusting at least one of a rise time and a fall time of a modulation signal; and

a modulator modulating a light with the adjusted modulation signal.

29. An apparatus as in claim 28, wherein the adjusting circuit performs one of the group consisting of:

adjusting both the rise time and the fall time,

lengthening both the rise time and the fall time, and

shortening both the rise time and the fall time.

30. An apparatus as in claim 28, wherein the modulated light is transmitted through a transmission path, the apparatus further comprising:

a receiver receiving the transmitted, modulated light through the transmission path, wherein the adjusting circuit adjusts said at least one of the rise time and fall time in accordance with characteristics of the modulated light at the receiver.

31. An apparatus as in claim 28, wherein the modulated light is transmitted through a transmission path, the apparatus further comprising:

a receiver receiving the transmitted, modulated light through the transmission path; and

a controller controlling the adjusting circuit to adjust said at least one of the rise time and fall time in accordance with characteristics of the signal light at the receiver.

32. An apparatus as in claim 28, wherein the adjusting circuit comprises:

an amplifier amplifying the modulation signal; and

a filter filtering the amplified modulation signal.

33. A method comprising:

adjusting at least one of a rise time and a fall time of a signal light; and

transmitting the adjusted signal light through a transmission path.

34. A method as in claim 33, further comprising:

receiving the transmitted signal light from the transmission path, wherein said adjusting adjusts said at least one of the rise time and the fall time in accordance with characteristics of the received signal light.

35. A method comprising:

adjusting at least one of a rise time and a fall time of a modulation

signal;

modulating a light with the adjusted modulation signal; and

transmitting the modulated light through a transmission path.

36. A method as in claim 35, further comprising:

receiving the transmitted modulated light through the transmission path, wherein said adjusting adjusts at least one of the rise time and fall time in accordance with characteristics of the received modulated light.

37. An apparatus comprising:

means for adjusting at least one of a rise time and a fall time of a modulation signal; and

a modulator modulating a light with the adjusted modulation signal.